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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/365,081	07/30/1999	LEE D. BENGSTON	RIC-99-030	1345

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TECHNOLOGY LAW DEPARTMENT
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EXAMINER	
SHAH, CHIRAG G	

ART UNIT	PAPER NUMBER
2664	

DATE MAILED: 05/20/2004

19

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/365,081	BENGSTON ET AL.	
	Examiner	Art Unit	
	Chirag G Shah	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 March 2004* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *18* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Baniewicz in view of Doshi (U.S. Patent No. 6,130,875).

Referring to claim 1 and 6, Baniewicz teaches a distributed restoration method and system for restoring communications traffic flow in response to sensing a failure within spans of the telecommunication network by mapping a topology of a spare capacity. Baniewicz teaches in figures 1 and 2 and respective portions of the specification of a DRA provisioned telecommunications network having a plurality of nodes interconnected with working and spare links. Baniewicz discloses in figures 7 and 8 and respective portions of the specification (column 7, lines 55 to column 9, lines 25) of outputting a message from each spare link of each of the nodes to the adjacent node to which the spare link is connected. Baniewicz discloses in claims 7 and 8 and respective portions of the specification of identifying the port number of the node from where the spare link outputs the message and the port number of the adjacent node connected to the spare link where at the message is received. Baniewicz disclose in figure 19, column 12, lines 60 to column 13, lines 18 of storing as data the respective port of the nodes that have connected thereto at least one spare link via which the message is either sent or received,

the identities of the nodes and the spare link interconnecting the nodes and generating from the stored data, the topology of spare links interconnecting the nodes of the network. Baniewicz further discloses in figure 12 and respective portions of the specification (column 10, lines 61 to column 11, lines 43) that when a failure occurs in the network, the step of transmitting from custodial nodes of the failed link a broadcast message takes place to downstream nodes to inform downstream nodes that it is a custodial node as claims. Furthermore, in column 9, lines 25-48, where it is clearly recites that once a failure occurs, failure notification starts the process by sending failure notification messages throughout the restoration subnetwork. Fault isolation entails determining which nodes are the custodial nodes, it is important to know the custodial nodes is that there are spares on the same span as the failed span. Thus, illustrating the step of outputting a message from each spare link of each of the nodes to the adjacent node (subnetwork) to which the spare link is connected, wherein at least two of the nodes are interconnected with plurality of spare links (spares) as claim. With respect to claim 6, in column 9, lines 60 to column 10, lines 60, it is shown that message is continuously transmitted (by alarm signal persisting for a period of time) and exchanged along spare links between adjacent nodes of the network (as illustrated before in column 9, lines 25-48) while a DRA process is not is progress. Thus, an AIS signal is continuously transmitted and exchanged along spare links between adjacent nodes of the network as claims. Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together with the computer executing the restoration process instruction. Baniewicz, however fails to explicitly disclose upon collecting the data at a central location, the data includes identities of the nodes

and the spare links interconnecting the nodes. Doshi et al teaches of a hybrid centralized/distributed approach and discloses in column 6, lines 51 to column 7, lines 13 and disclosed in column 34 lines 61 to column 35, lines 29 and in claims 1 and 2 and respective portions of the specification of collecting and computing and downloading information in a central controller (computer) including network connectivity information regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links in the network, a subset of all the possible routes (spares links) between a source and a destination node in the network arranged in an appropriate order among other information listed in the respective portion of the specification. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to provide an improved restoration technique in a large scale network while reducing the requirement of requiring a central computer of substantial computing capacity.

Referring to claims 2, 3, 9, 10, 14, and 15, Baniewicz teaches of a distributed restoration method and system for restoring communications traffic flow in response to sensing a failure within spans of telecommunications network. Baniewicz discloses in column 4-7 and related sections of the specification of proving the generated topology of the spare links of the network to an origin node for beginning the restoration process if a failure occurs in the network. Baniewicz also discloses in figure 19 and respective portion of the specification where return messages contain information relating to the number of spare links available for connecting the origin node to the destination node, this process in done in iterations and updated continuously. Furthermore, the return message received is the ability to establish at the origin node a map of

the restoration network showing where the spare capacity is useable for the restoration. Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together with the computer executing the restoration process instruction. Baniewicz fails to teach of storing data in a central computer. Baniewicz also fails to teach of storing the updated status in a central computer, wherein the central processing means uses the updated status to provide a real time topology of the spare capacity of the network. Doshi teaches of a hybrid centralized and distributed techniques for restoring communication in a network after a failure in a link, span or node of the network. Doshi teaches in columns 5 and 6 of utilizing the central processor or controller (computer) for downloading network connectivity information regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links in the network. Thus, other types of centrally computed information may also be downloaded to the nodes for use in a distributed algorithm. Therefore, it would have been obvious to one of ordinary skill in the art to modify the teaching of Baniewicz to include the teachings of Doshi in order to make more efficient use of spare capacity storage and to provide a more efficient real-time discovery based approach for failure scenarios.

Referring to claims 4, 11, and 16, Baniewicz clearly discloses in figures 10 and 11 and respective portions of the specification that when a failure occurs in the network, further comprising the step of transmitting from a custodial nodes of the failed link a message, via a functional spare link, to downstream nodes thereof to inform downstream nodes that it is a custodial node as claims.

Referring to claim 5, 12, and 17 Baniewicz clearly illustrates in columns 5 and 6 of when how a custodial node of a failed link is selected to be an origin node and the origin node utilized the topology of the spare capacity of the network to find an alternate route for the disrupted traffic as claim.

Referring to claim 8, Baniewicz teaches a distributed restoration method and system for restoring communications traffic flow in response to sensing a failure within spans of the telecommunication network by mapping a topology of a spare capacity. Baniewicz teaches in figures 1 and 2 and respective portions of the specification of a DRA provisioned telecommunications network having a plurality of nodes interconnected with working and spare links. Baniewicz discloses in figures 7 and 8 and respective portions of the specification (column 7, lines 55 to column 9, lines 25) of outputting a message continuously (column 9, lines 60 to column 10, lines 60, where it is shown that message is continuously transmitted (by alarm signal persisting for a period of time) and exchanged along spare links between adjacent nodes of the network (as illustrated before in column 9, lines 25-48) to which the spare link is connected) from each spare link of each of the nodes to the adjacent node to which the spare link is connected. Baniewicz discloses in claims 7 and 8 and respective portions of the specification of identifying the port number of the node from where the spare link outputs the message and the port number of the adjacent node connected to the spare link where at the message is received. Baniewicz disclose in figure 19, column 12, lines 60 to column 13, lines 18 of storing as data the respective port of the nodes that have connected thereto at least one spare link via which the message is either sent or received, the identities of the nodes and the spare link interconnecting the nodes and generating from the stored data, the topology of spare links interconnecting the

nodes of the network. Baniewicz further discloses in figure 12 and respective portions of the specification (column 10, lines 61 to column 11, lines 43) that when a failure occurs in the network, the step of transmitting from custodial nodes of the failed link a broadcast message takes place to downstream nodes to inform downstream nodes that it is a custodial node as claims. Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together with the computer executing the restoration process instruction. Baniewicz, however fails to explicitly disclose upon collecting the data at a central location, the data includes identities of the nodes and the spare links interconnecting the nodes. Doshi et al teaches of a hybrid centralized/distributed approach and discloses in column 6, lines 51 to column 7, lines 13 and disclosed in column 34 lines 61 to column 35, lines 29 and in claims 1 and 2 and respective portions of the specification of collecting and computing and downloading information in a central controller (computer) including network connectivity information regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links in the network, a subset of all the possible routes (spares links) between a source and a destination node in the network arranged in an appropriate order among other information listed in the respective portion of the specification. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to provide an improved restoration technique in a large scale network while reducing the requirement of requiring a central computer of substantial computing capacity.

Referring to claim 13, Baniewicz teaches a distributed restoration method and system for restoring communications traffic flow in response to sensing a failure within spans of the telecommunication network by mapping a topology of a spare capacity. Baniewicz teaches in figures 1 and 2 and respective portions of the specification of a DRA provisioned telecommunications network having a plurality of nodes interconnected with working and spare links. Baniewicz discloses in figures 7 and 8 and respective portions of the specification (column 7, lines 55 to column 9, lines 25) of outputting a message from each spare link of each of the nodes to the adjacent node to which the spare link is connected. Baniewicz discloses in claims 7 and 8 and respective portions of the specification of identifying (each spare link prior to a failure in column 9, lines 25-48) the port number of the node from where the spare link outputs the message and the port number of the adjacent node connected to the spare link where at the message is received. Baniewicz disclose in figure 19, column 12, lines 60 to column 13, lines 18 of storing as data the respective port of the nodes that have connected thereto at least one spare link via which the message is either sent or received, the identities of the nodes and the spare link interconnecting the nodes and generating from the stored data, the topology of spare links interconnecting the nodes of the network. Baniewicz further discloses in figure 12 and respective portions of the specification (column 10, lines 61 to column 11, lines 43) that when a failure occurs in the network, the step of transmitting from custodial nodes of the failed link a broadcast message takes place to downstream nodes to inform downstream nodes that it is a custodial node as claims. Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together with the computer executing

the restoration process instruction. Baniewicz, however fails to explicitly disclose upon collecting the data at a central location, the data includes identities of the nodes and the spare links interconnecting the nodes. Doshi et al teaches of a hybrid centralized/distributed approach and discloses in column 6, lines 51 to column 7, lines 13 and disclosed in column 34 lines 61 to column 35, lines 29 and in claims 1 and 2 and respective portions of the specification of collecting and computing and downloading information in a central controller (computer) including network connectivity information regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links in the network, a subset of all the possible routes (spares links) between a source and a destination node in the network arranged in an appropriate order among other information listed in the respective portion of the specification. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to provide an improved restoration technique in a large scale network while reducing the requirement of requiring a central computer of substantial computing capacity.

Referring to claim 18, Baniewicz discloses in figures 1, 2, 7, and 8 and in column 7, lines 55 to column 9, lines 25 of a method of managing spare capacity in a communications network including a plurality of nodes interconnected via working and spare links. Baniewicz discloses in claims 1-3 and respective portions of the specification of transmitting a keep alive message from a first node to a second node, via a selecting spare link interconnecting a transmit port of the first node and a receive port of the second node. Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together

with the computer executing the restoration process instruction. Baniewicz, however fails to explicitly of collecting, at a central location, a number of parameters associated with the keep alive message, the collected parameters including a first node identifier, a transmit port identifier, a second node identifier, and a receive port identifier. Doshi et al teaches of a hybrid centralized/distributed approach and discloses in column 6, lines 51 to column 7, lines 13 and disclosed in column 34 lines 61 to column 35, lines 29 and in claims 1 and 2 and respective portions of the specification of collecting and computing and downloading information in a central controller (computer) including network connectivity information (associated with the keep alive messages) regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links in the network. Furthermore, Doshi discloses in the respective sections of a link connection index for every link including the collected parameters such as a first node identifier, a transmit port identifier, a second node identifier and a receiver port identifier. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to optimally compute the best available path based on having knowledge of the entire network topology as well as capacities of all links in the network.

Referring to claim 19, Baniewicz discloses in column 23, lines 33-67 that computers at layer 1 perform the instructions of the restoration process and a computer may be centralized in the specific shelf where all layer 1 computers are in one place together with the computer executing the restoration process instruction. Baniewicz fails to disclose the method further comprising: conveying the collected parameters, upon a failure of one of the working links, from the central location to a network node for purposes of network restoration. Doshi et al discloses

in abstract, column 6, lines 51 to column 7, lines 36 and claims 1 and 9 that information is collected at the centralized controller (computer) and when a failure occurs with a working link (information regarding connectivity), the downloaded information is used as an input to a distributed percomputation algorithm for network restoration. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to optimally compute the best available path based on having knowledge of the entire network topology as well as capacities of all links in the network.

Referring to claim 20, Baniewicz clearly discloses in figures 10 and 11 and respective portions of the specification that when a failure occurs in the network, further comprising the step of transmitting from a custodial nodes of the failed link a message, via a functional spare link, to downstream nodes thereof to inform downstream nodes that it is a custodial node, thus, indicating that the custodial node initiates a network restoration process as claim.

Referring to claims 21 and 22, Baniewicz discloses in claims 1 and 6 and respective portions of the specification wherein the steps of transmitting embedded keep alive messages between each pair of neighboring nodes connected by a spare link. Baniewicz fails to disclose collecting is performed for each spare link in the communications network continually. Doshi et al teaches of a hybrid centralized/distributed approach and discloses in column 6, lines 51 to column 7, lines 13 and disclosed in column 34 lines 61 to column 35, lines 29 and in claims 1 and 2 and respective portions of the specification of collecting and computing and downloading information in a central controller (computer) including network connectivity information (associated with the keep alive messages) regarding interconnection between the network nodes in the absence of failures, capacities for at least a subset of the links (for each spare link) in the

(communications) network. Furthermore, Doshi discloses in the respective sections of a link connection index for every link including the collected parameters such as a first node identifier, a transmit port identifier, a second node identifier and a receiver port identifier. In addition, Doshi discloses in column 34, lines 30-60 that the steps of transmitting and collecting are performed continually using state exchange algorithms. Therefore, it would have been obvious to one of ordinary skills in the art to modify the teachings of Baniewicz to include the teachings of Doshi in order to optimally compute the best available path based on having knowledge of the entire network topology as well as capacities of all links in the network.

Any response to this action should be mailed to:

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Or faxed to:

(703)305-3988, (for formal communications intended for entry)

Or:

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Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 703-305-5639. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
May 14, 2004

Primary Examiner